WEST VALLEY DEMONSTRATION PROJECT

Doc. ID Number WVDP-087

Revision Number 3

Revision Date _____

Controlled Copy No. _____

WASTE MINIMIZATION/POLLUTION PREVENTION AWARENESS PLAN

PREPARED BY:

_____ _____

T. E. Jones — Date
Cognizant Author

PREPARED BY:

_____ _____

D. F. Burke — Date
Cognizant Author

APPROVED BY:

_____ _____

P. E. Walters — Date
Cognizant Manager

WVNS RECORD OF REVISION

DOCUMENT

If there are changes to the controlled document, the revision number increases by one. Indicate changes by one of the following:

- Placing a vertical b lack line in the margin adjacent to sentence or paragraph that was revised.
- Placing the words GENERAL REVISION at the beginning of the text.
- Placing either FC#> or PC#> (whichever applies) in the left-hand margin at th e beginning of the paragraph or section where t he field/page change has been made AND placing a vertical black line in the margin adjacent to the actual change.

Example :

The vertical line in the margin indicates a change. *

FC1> The FC#> in the margin along with the vertical line * line (redline) indicates a change. *

Rev. No.	Description of Changes	Revision On Page(s)	Dated
0	Original Issue	All	03/27/91
1	Information Update - General Revision	All	08/16/94
2	Information Update - General Revision	All	05/31/95
3	Information Update - General Revision	All	05/27/97

WVNS RECORD OF REVISION CONTINUATION FORM

Rev. No.	Description of Changes	Revision On Page(s)	Dated

TABLE OF CONTENTS

WASTE MINIMIZATION/POLLUTION PREVENTION AWARENESS PLAN

1.0 INTRODUCTION

1.1 Purpose of Plan

This plan documents the development and implementation of the WVDP's Waste Minimization and Pollution Prevention (WMin/PP) Awareness Program. The purpose of this plan is to establish the strategic framework for integrating WMin/PP into waste generation and reduction activities.

The plan includes setting goals for reducing the generation of wastes and pollutants, reducing the potential for cross media pollution, increasing recycling activities, and establishing an infrastructure to achieve and measure the goals. It also specifies activities and methods that will be employed to reduce the quantity and toxicity of HLW, LLW, hazardous waste (HW), radioactive mixed waste (RMW), industrial waste, and sanitary waste generated and to conserve resources and energy. This plan also provides a basis for planning personnel, funding and activities to support the WMin/PP Program at WVDP.

This WMin/PP Plan has been prepared in accordance with the 1996 DOE Pollution Program Plan, the "Waste Minimization/Pollution Prevention Crosscut Plan 1994", the DOE Order 5400.1 and the “Guidance for Preparation of Site Pollution Prevention Plans”, dated February 27, 1997. The WVDP WMin/PP plan reflects national, DOE, and WVNS WMin/PP goals and policies and represents the incorporation of WMin/PP as part of WVDP's operating philosophy. A complete listing of WMin/PP Drivers is located in Appendix D.

All information required for the WVDP Hazardous Waste Reduction Plan is incorporated in this Plan.

1.2 Scope of Plan

The WVDP WMin/PP program is an organized, comprehensive, and continual effort to systematically reduce HW, LLW, RMW, industrial, and sanitary wastes; conserve resources; and prevent or minimize pollutants released to all environmental media from all WVDP activities.

In accordance with policies, a hierarchical approach to environmental management has been adopted and is applied to all types of waste. WMin/PP through source reduction is first priority in WVDP's WMin/PP program, followed by reuse and then environmentally safe recycling. Waste treatment to reduce the quantity, toxicity, or mobility (or combination of these) will be considered only when prevention, reuse or recycling is not practical. Environmentally safe disposal is the last option.

This plan should be used as a reference tool and guidance document by managers, operations personnel, and support staff to incorporate WMin/PP into all applicable WVDP activities. It applies to all WVDP waste generating activities and contains the objectives, strategy, and support activities of the WMin/PP program. This plan will be reviewed annually and revised as necessary. At a minimum, the plan will be updated every two years.

1.3 Implementation Strategy

Each section of this plan identifies key elements that must be implemented to establish and maintain a successful WMin/PP program. It is recognized that these elements may be implemented in different ways depending on the needs and preferences of individual organizations and facilities.

The foundation of an implementation strategy will be to continually obtain accurate, current and specific hazardous substance use data, waste stream generation data, and information on waste management costs. This information will provide the baseline for information needed to concentrate program resources and identify, evaluate, and implement cost-effective WMin/PP opportunities and techniques. Those activities that will result in the highest safety, health, environmental, and economic returns on investment will be top priority for program personnel and resources. The essential strategy features of the WMin program are (1) maintain an organization of management and staff personnel to develop and implement an effective program, (2) identify priority hazardous substances used and priority hazardous, radioactive, mixed, industrial and sanitary waste generated, (3) identify WMin/PP opportunities to be implemented, (4) implement cost-effective WMin/PP technologies and initiatives, (5) communicate and train employees on WMin/PP philosophy, and (6) track performance and measure program progress. Progress toward achievement of the WMin/PP goals and objectives, as specified in this Plan, will be measured and reported in accordance with Section 4.0 of this Plan.

2.0 PROGRAM DEVELOPMENT

2.1 Waste Minimization/Pollution Prevention Site Policy

Waste Minimization is a fundamental philosophy to be integrated into policies, decision-making, and daily activities. Effective policy direction requires management focus on waste minimization based on the recognition of true waste cost avoidances and customer expectations. Management shall commit resources necessary to support WMin/PP program improvement and to implement cost-effective recommendations identified through Pollution Prevention Opportunity Assessments (PPOA), surveillances, evaluations, etc.

WVDP is fully committed to environmental quality and protecting public health and safety by advancing the goals of excellence in all waste management activities including waste minimization. Pursuant to the provisions of DOE Order 5400.1, "General Environmental Protection Program," and in accordance with the Environmental Protection Implementation Plan (EPIP) for the WVDP, it is the policy of the WVDP to conduct its operations in a manner that is environmentally sound and assures the health and safety of the public. All activities conducted at the WVDP will reflect this policy to enhance public trust. In addition, it is in part the policy of the WVDP to undertake appropriate measures to minimize the generation of wastes and other residual or excess material requiring storage, disposal or release to the environment, through source reduction and recycling. Where the generation of such wastes cannot be avoided, WVDP will take action to reduce the volume, toxicity and/or mobility of these wastes. WVDP has issued policy WV-918, “Waste Minimization and Pollution Prevention Awareness Program”, to reinforce waste minimization principles and the need for a WMin/PP program to enhance awareness at WVDP.

Pursuant to the provisions of DOE Orders 5400.1, 5820.2A, "Radioactive Waste Management”, and 5400.3, "Hazardous and Radioactive Mixed Waste Program", this WMin/PP Plan affirms and implements the WVDP policy to minimize (prevent generation) and reduce (defined to mean reduction in total volume, toxicity and/or mobility) all waste types at the WVDP consistent with the mission of the WVDP.

2.2 Objectives

The objectives of this Plan are:

2.2.1 To provide a comprehensive, on-going WMin/PP program at WVDP;

2.2.2 To promote WMin/PP as regular practice in the on-going development of methods for characterizing and tracking WVDP waste streams;

2.2.3 To promote the identification and implementation of applicable methods and technologies for WMin/PP;

2.2.4 To provide a training and awareness program for all employees at WVDP which includes WMin/PP; and

2.2.5 To help assure WVDP compliance with Federal, state, local, and DOE requirements for WMin/PP.

2.3 Goals

The DOE and New York State goals for waste minimization are:

- to prevent or minimize the generation of radioactive, hazardous and radioactive mixed waste at WVDP; and for waste that is generated, to reduce the volume, toxicity and mobility through treatment (in accordance with appropriate regulations and permits) consistent with good waste management practices; and,

- to foster a waste generation prevention/minimization culture, and incorporate it into the management and job ethic so that it is routinely integrated into each phase of employee operating procedures and process design considerations, in a manner similar to safety and quality assurance/quality control concepts and awareness.

Specific WVDP WMin/PP program goals:

2.3.1 Using CY 1993 as base year, reduce LLW, RMW, and non-vitrification related HW generation by at least 50% by the end of CY 1999.

2.3.2 Using CY 1993 as base year, reduce sanitary waste and non-vitrification related industrial waste generation by at least 30% by the end of CY 1999.

2.3.3 Using CY 1996 as a base year, reduce vitrification related HW by at least 28% and vitrification related industrial waste by at least 18% by the end of CY 1999.

2.3.4 Perform Pollution Prevention Opportunity Assessments (PPOAs) for major waste streams.

2.3.5 Evaluate and implement innovative PP/WMin technologies that eliminate and/or reduce waste generation.

2.3.6 Continue and expand the Site Recycling Program as indicated in Table 2.

2.3.7 Increase site awareness of waste minimization and pollution prevention.

2.4 Responsibility

Line management responsibility for the successful implementation of this plan rests with both the Department of Energy-West Valley (DOE-WV) and WVNS management. Technical responsibility for the WMin/PP Plan resides with the WVNS Waste Management Technical Support (WMTS) group. The DOE-WV role also includes oversight of WVNS. The WVNS organization includes environmental regulatory compliance and Quality Assurance (QA) functions to assess performance in the many programs at the WVDP,

including the WMin/PP Plan. The WVNS Management Control System provides accurate measurement of cost, schedule and technical performance. Budgets and schedules are tied directly to the accomplishment of actual work, and work accomplishment is measured as objectively as possible. Status is provided to DOE-WV on a weekly basis.

The DOE-WV and WVNS organizations responsible for WMin/PP at WVDP are shown in Figure 1. The DOE-WV has the DOE line management responsibility and will oversee contractor WMin/PP activities. The DOE-WV Remedial Project and Waste Management Team has overall line management responsibility for WMin/PP. The WVNS Site Operations Staff Manager has the responsibility for implementing and coordinating WMin/PP activities at WVDP from the top levels down to line management. The WMTS Manager is the cognizant manager for the WMin/PP Plan and is responsible for its preparation, revision, and implementation. The WVNS WMTS Manager has responsibilities for gathering waste generation data, establishing baselines, tracking and measuring progress toward goals, re-defining goals, and submitting reports on WMin/PP.

Supporting the WMTS Group in this effort are the Waste Characterization and Shipping (WCS) Group, Radiation Protection (RP) group, the Regulatory Compliance (RC) group (which provides regulatory guidance for HW and RMW), the Procurement group (for promoting affirmative procurement of products containing recycled materials), and the Training and Development (T&D) department (which has responsibility for training). All other WVNS units support the Waste Management Department through compliance with the WMin/PP Plan. The DOE-WV oversees WVNS and subcontractors, and monitors progress toward achievement of the WMin/PP goals.

The mechanism used for WMin/PP program improvement is the accurate and sustained management tracking of progress toward program goals. The interaction/coordination between waste generators and waste management is briefly described below.

Waste Management Operations (WMO), WCS, and Analytical and Process Chemistry (A&PC) groups interact to manage the storage, treatment, sampling, analysis, characterization and shipping of LLW, HW, RMW, industrial waste, and sanitary waste.

The WMO group is responsible for the physical handling, sorting, packaging, storage, and maintenance of LLW, RMW, HW, and industrial waste.

WCS is responsible for specifying RMW, HW, and industrial waste accumulation methods and procedures and packaging requirements. WCS is also responsible for providing information for reporting, coordinating and guidance to other department generators; compliance inspections; and coordinating off-site shipments. WCS is responsible for the on-site procurement/tracking system for hazardous materials.

RC determines the applicability of Federal, State, and Local regulations for the management of LLW, HW, RMW, industrial waste, and sanitary waste. In addition, RC provides guidance to those organizations responsible for the management of these wastes and performs surveillances of waste generation and management processes to ensure compliance with regulatory requirements.

The Procurement department works with WMTS to promote affirmative procurement of products containing recycled materials.

The WMin/PP training at WVDP is the responsibility of the WMTS group and is implemented by the T&D, WMO, and RC groups.

2.5 Resource Requirements

WVDP is funded through a single source (one Activity Data Sheet (ADS) for the entire Project). Therefore, it is not practical to provide a separate ADS for WMin/PP activities. Funding for WMin/PP activities is provided as part of the budgets for WMTS and other involved groups. The WMTS group cost account included a work package for WMin/PP activities beginning in FY95. This work package provides funding for personnel and WMin/PP Activities performed by the WMTS group only. Funding for WMin/PP activities performed by other groups are supplied by their respective budgets. Therefore, budgetary information for the WMin/PP Plan is not tracked separately and is an estimate.

2.6 Activity Schedule

The following activities have been scheduled to support WMin/PP goals. The activities will be tracked in the WVNS Open Items Tracking System:

2.6.1 For CY 1997 (index to 1993 generations), achieve low-level and mixed waste reductions of 34 percent

2.6.2 For CY 1997 (index to 1993 generation), achieve a non-vitrification, hazardous waste reduction of 34 percent

2.6.3 For CY 1997 (index to 1996 baseline value), achieve a vitrification, hazardous waste reduction of 9 percent

2.6.4 For CY 1997 (index to 1993 generation), achieve a non-vitrification, industrial waste reduction of 22 percent

2.6.5 For CY 1997 (index to 1996 baseline value), achieve a vitrification, industrial waste reduction of 6 percent

2.6.6 For CY 1997 (index to 1993 generation), achieve a sanitary waste reduction of 14 percent

2.6.7 By August 1997, reduce the LLW soil inventory by 50 boxes by implementing soil sorting technology

2.6.8 By September 1, 1997, develop waste management cost information for LLW, RMW, HW, IW, and SW

2.6.9 By October 1997, decontaminate at least 8,000 pounds of mixed waste lead to "free release" limits

2.6.10 Maximize the filling of vitrification canisters, produced 10/1/96 to 9/30/97, above 85%

2.6.11 By December 1997, complete six (6) Pollution Prevention Opportunity Assessments (PPOAs).

2.6.12 By February 1998, issue CY 1997 waste reduction status summaries for low-level, hazardous, mixed, industrial and sanitary wastes

2.6.13 By March 1998, document CY 1997 waste elimination/reduction and recycle successes

2.6.14 By April 1998, prepare "1997 Annual Report on Waste Generation and Waste Minimization Progress" and issue to DOE

2.6.15 By June 1998 perform the annual review of WVDP-087 and update the WMin/PP activity schedule.

3.0 TRAINING, AWARENESS, AND INCENTIVES

3.1 General Employee Training

Various WMin/PP techniques have been and will be implemented with the support of employee training and awareness programs to prevent pollution and reduce waste, and still meet requirements for quality, productivity, safety, and environmental compliance.

Early investments in WMin/PP will help eliminate pollutant releases to the environment and help reduce rising waste management costs for the storage, treatment and disposal of wastes. WMin/PP will also provide additional benefits such as reduction of compliance costs, reduction of resource usage, improvement in efficiency of operation, and reduction or elimination of inventories and releases of hazardous chemicals reportable under the "Emergency Planning and Community Right-to Know Act" (Superfund Amendments and Reauthorization Act of 1986, Title III). WMin/PP training is provided for all personnel at the site. The goal of the training program is to make each employee aware of waste

generation, its impact on the site and the environment, and ways waste can be reduced and pollution prevented. General WMin/PP principles are presented to WVDP employees on an annual basis in the WVDP General Employee Training (TR236Q), Radiological Worker Training (TR132Q), and Hazardous Waste Operations 8-Hour Refresher Course (TR307C), and an Annual Mandatory Briefing (TR508B).

Wmin/PP topics covered in these courses include:

- A definition of WMin and PP
- Source Reduction, Recycling, Reuse, Treatment, and Disposal Options
- Various activities that can be performed to support WMin/PP
- Examples of WMin/PP programs in place at WVDP.
- Employee responsibilities (compliance with company and facility WMin/PP programs, planning and practicing WMin techniques, and complying with WMin strategies incorporated in Standard Operating Procedures).

Training courses will be revised and updated as needed in responses to new regulatory requirements, new procedures, or revisions of existing procedures.

A hazardous materials training program is in place at WVNS. The program satisfies requirements of 40 CFR Part 262, 6 NYCRR 373, and 29 CFR 1910.120. Waste reduction concepts and awareness continue to be incorporated into the management culture and the job ethic. These concepts are integrated into operating procedures and design considerations in a manner similar to safety and quality assurance/ quality control concepts and awareness. Employees are involved in waste elimination/reduction planning and implementation. Training programs have been instituted to educate all employees.

3.2 Pollution Prevention Awareness

A successful WMin/PP program requires employee commitment. By educating employees in the principles and benefits of PP, solutions to current and potential environmental management problems can be found. Pollution Prevention Awareness is an integral part of the overall WVDP WMin/PP program. The program makes use of posters (designed to be reused) highlighting various WMin/PP accomplishments at WVDP, an incentive and award program including WMIN/PP criteria, presentations at workplace meetings, various articles in the site's newsletter, and Earth Day Activities to enhance employee awareness of and participation in WMin/PP at the site. Additionally, PP Coordinators have been designated to communicate, share and publicize pollution prevention ideas and successes to heighten awareness and foster a PP culture that will be incorporated into the job ethic at WVDP. The integration of PP

awareness into the WVDP decision-making and working level activities is based on the philosophy that WMin/PP is a superior proactive approach to environmental protection compared to mitigation and/or remediation.

Training programs, surveillances, employee job assignments and performance are evaluated regularly to determine whether employees have the necessary tools, equipment, and training to accomplish goals and objectives of hazardous waste reduction. The integration of pollution prevention awareness into decision-making and working level activities is based on the philosophy that pollution prevention, through pre-job planning, source reduction, reuse, and recycling is a superior proactive approach for environmental stewardship.

3.3 Pollution Prevention Coordinators

A crucial component of the PP awareness program at WVDP is the PP Coordinators. The Coordinators communicate, share and publicize WMin/PP ideas, successes and barriers, to heighten awareness and foster a prevention/reduction/reuse/recycling culture at WVDP. The mission of PP Coordinators is to communicate WMin practices in order to eliminate and/or reduce the generation of all types of waste in every phase of our activities at the WVDP. Success will be measured by heightened employee awareness and the effective utilization of methods for waste elimination, reduction, reuse, recycling, and treatment.

The PP Coordinators will identify and facilitate the implementation of effective source reduction, reuse, recycling, treatment, storage, and disposal alternatives that will reduce waste volumes, improve environmental compliance, and reduce waste management costs. Self-directed teams will be established to evaluate specific PP concerns and issues.

3.4 Awards and Recognition

The "Ideas For Excellence" Program offers a way for employees to present any definite plans, actions, or changes in systems or policies and practices that will maintain or improve the quality of a product, process, or service. Improvement criteria for the program includes such WMin/PP philosophies as "Stops waste and spoilage" and "In lieu of new purchases, utilizes equipment and/or facilities which would be unused or discarded under an approved plan of action".

Employees can receive credit and potentially a monetary award by submitting a cost effective, process improvement, safety related or WMin/PP idea to the "Ideas for Excellence" Committee. By submitting an idea, the employees become eligible for a monthly cash drawing and have an opportunity to earn extra dollars if their idea involves cost savings and is implemented. The cognizant manager of the specified area/activity receives the idea for evaluation and implementation if feasible.

4.0 TRACKING AND REPORTING SYSTEMS

4.1 Tracking

4.1.1 Waste Tracking, Reporting, and Waste Reduction Goals

Multiple databases are used for tracking and reporting hazardous material inventories as well as LLW, TRU waste, HW, RMW, and IW inventories at the WVDP. These databases provide documentation for the generation, sampling and analysis, treatment, storage, and disposal of waste. Data contained in these computerized systems include characterization, waste code, container identification, description, weight, and date the waste was declared a specific waste type (radioactive, hazardous, mixed, or industrial). This program tracks the waste types to support waste minimization, segregation, treatment, storage, and disposal activities. Data collection for sanitary waste generation was initiated in 1994 and is not maintained in a separate data base at this time. HLW pretreatment and vitrification operations that result in the generation of square drums of LLW (stored in the drum cell) and canisters of vitrified glass, are tracked through Engineering log books.

During 1994 and 1995, the goals associated with routine waste reduction were modified to include all waste generations except vitrification and legacy wastes. The long term waste reduction goals were modified as follows: 50% for radioactive, mixed, and hazardous wastes; and 30% for industrial and sanitary wastes by December 31, 1999. Guidance from the DOE-WV recommended that the baseline values against which future waste generations are compared would be actual CY 1993 generations. The baseline values and aggressive reduction goals for 1994 through 1999 are listed in Table 1.

For the period 1994 through 1996, vitrification, legacy and non-routine wastes generated at the WVDP, were excluded from the waste tracking system. The baseline year for determining waste reduction performance was 1993. Vitrification wastes are addressed in the WVDP tracking system starting in CY 1997.

Early in 1997, WVDP decided to absorb vitrification related low-level (LLW), mixed (MW) and sanitary (SW) wastes into the standard waste reduction system, since the future quantities of waste generated from routine, vitrification operations were expected to be minimal compared to the routine, non-vitrification generation rates. Therefore, for the LLW, MW, SW, and non-vitrification hazardous (HW) and industrial (IW) streams, we will continue to use the reduction goal and 1993 baseline values listed in Table 1 to monitor annual waste reduction progress. However, because of the large amounts of HW and IW that are expected to be generated from vitrification operations, separate reduction goals and baselines were developed for these waste streams. WVNS will use the aggressive reduction goals and the baselines (derived from

actual 1996 operational data) presented in the table to monitor reduction progress for vitrification HW and IW in 1997, 1998, and 1999. Legacy wastes, non-routine wastes and wastes resulting from equipment failures (including the failed component) and operational upsets as well as glass canisters have been and will continue to be exempted from the waste generation and tracking tabulations.

These WVDP goals support the aforementioned long term DOE reduction goals and will be achieved mainly by the implementation of recycling/reuse, source reduction and PPOA initiatives.

For 1996, the specific reduction goals were set at 26% each for LLW, MW, and HW, 18% for IW, and 10% for SW. As indicated in the waste reduction status summary in Appendix C, acceptable waste reductions of 91%, 67%, and 66% were determined for LLW, MW, and HW, while respective IW and SW reductions of 50% and 44% resulted. These reductions resulted after comparing non-legacy, non-vitrification 1996 waste generation values to 1993 generation values. They exceeded their goals by significant margins.

The WMTS group is responsible for tracking and reporting waste reduction progress. Waste generation data are collected and indexed to the baseline values. Reduction performance is reported quarterly.

4.1.2 Program Activity Tracking

A system to track waste minimization activities was developed to provide feedback for WMin/PP Program successes. The system compiles information for noteworthy initiatives and documents cost savings, waste avoidances, and other implemented options. The WMin/PP Activity Tracking form is located in Appendix A.

Management is responsible to complete the form on a quarterly basis for WMin/PP activities that have been performed by their department.

4.1.3 Cost Accounting

The plan budget is an estimate and not tracked separately. Budget status is tracked at the cost account level through the WVNS cost schedule control system. Therefore, detailed budgetary information will not be tracked through this plan.

4.2 Reporting

Tracking systems developed under this program are designed to facilitate reporting WMin/PP data and accomplishments to the DOE, NYSDEC and the EPA. The program uses databases maintained by Waste Operations personnel to meet programmatic needs.

5.0 WASTE STREAM MINIMIZATION EFFORTS

The categories of waste that exist at the WVDP include HLW, Class A, B, and C LLW, TRU, HW, RMW, industrial waste and sanitary waste. Vitrified HLW in stainless steel canisters, are stored in High Level Waste Interim Storage (HLWIS). Class A LLW is stored both outside and in storage structures. Class B/C low-level wastes are stored in steel drums and boxes on-site. Processed LLW wastes from the IRTS are stored in the Drum Cell. Hazardous wastes resulting from on-site operations are packaged, treated (neutralization), and/or disposed off-site in compliance with applicable and appropriate regulations issued under the authority of the Resource Conservation and Recovery Act (RCRA). RMW are being stored on-site pending a decision on disposition of these materials, per the Federal Facility Compliance Act (FFCA) Consent Order and Site Treatment Plan.

Brief descriptions of the waste stream sources and the efforts currently being utilized to minimize the HLW, TRU, LLW, HW, RMW, IW, and SW include:

5.1 High-Level Waste

At the inception of the WVDP Act, the high level wastes stored on-site included 2,200 cubic meters of PUREX and THOREX mixed wastes that were generated during Nuclear Fuel Service’s (NFS) commercial reprocessing of spent nuclear fuel rods and stored in underground tanks. After pretreatment operations were completed in May 1995, via the utilization of the IRTS process, the major high-level waste remaining included the PUREX/THOREX high level mixed waste sludge, cesium-loaded zeolite and titanium coated zeolite which was eventually mixed with the sludge-slurry portion. The HLW is identified in WVDP's RCRA Part A permit application as a characteristic mixed waste.

The IRTS process was utilized to separate the low-level fraction from the NFS generated high level wastes' supernatant and sludge wash solutions and solidify the low-level solutions in cement (LLW). This process reduced the volume of HLW which would require vitrification, thus reducing the volume of glass contained in canisters which is being produced for final disposal. It is projected that approximately 300 canisters containing HLW glass logs (31 ft^3 volume per log), filled above 85%, will be generated through 1998 and temporarily stored in the

CPC.

5.2 Transuranic Waste

The transuranic waste stream sources include liquid, sludge, resin, filter media, equipment, and debris from fuel pool clean-up and decontamination operations.

Identification and removal of "hot" items from TRU waste containers could result in reclassification to LLW. The effective utilization of empty space in storage containers will result in decreased waste volumes. Although the utilization of empty space is not considered waste minimization, it is a good waste management practice.

5.3 Low-Level Waste

The low level waste stream sources include decontaminated sludge wash solution, solid wastes from the Low Level Waste Treatment Facility (LLWTF), sludge, zeolite, and anthracite, as well as liquid, sludge, oil, equipment, dirt and debris from decontamination, analytical, maintenance, laundry, construction and miscellaneous plant operations.

The LLW program minimizes dry solid radioactive waste by administrative controls, including planned careful segregation of clean materials from contamination zones, and by decontaminating tools for reuse wherever practical. Recycling of empty waste containers, radiological monitoring to segregate nonradioactive from radioactive waste, and process modifications are also used to reduce the volume of waste requiring storage and disposal.

The amount of low-level waste generated in 1996 is quantified in Appendix C. Specific activities that reduced the amount of low-level waste generated are delineated in Appendix B.

5.4 Hazardous Waste

The hazardous waste stream sources include materials no longer required, chemicals with expired shelf lives, chemical wastes from the Analytical and Environmental Labs and from vitrification related operations, spent reproduction solutions, sludges, materials, and oils associated with maintenance activities.

Recycling and source reduction via substitution are the primary methods of minimization in the HW program. Whenever possible, excess hazardous materials are returned to vendors for re-use.

A hazardous waste generation summary for CY 1996 is presented in Table 4 with identification, disposal method, source, and mass data. At least 90% of all non-acute hazardous waste generated during 1993, 1994, 1995, and 1996 are addressed. An arsenic oxide, acute hazardous waste (0.70 Kg) was generated in 1996, with a waste code of P012. The total mass of hazardous waste generated in 1996 was 95.99 tons, as indicated in Table 3. This total is significantly more than the 78.65 tons of waste generated in 1995 and is the result of the level of effort associated with the startup of full scale, vitrification operations. Table 5 supplies the information related to the 1997 hazardous waste reduction program.

Narratives and diagrams for the waste streams (generated in 1996 and listed in Table 4) are provided in Appendix E. The amount of hazardous waste generated in 1996 is quantified in Appendix C. Specific activities that reduced the amount of hazardous waste generated are delineated in Appendix B.

5.5 Radioactive Mixed Waste

The radioactive mixed waste stream sources include chemical wastes from the Analytical and Environmental Labs, lead previously used for shielding, and oils and hydraulic fluids associated with maintenance activities. A major initiative was started to decontaminate mixed waste lead via a carbon dioxide blast treatment method.

The amount of mixed waste generated in 1996 is quantified in Appendix C. Specific activities that reduced the amount of mixed waste generated are delineated in Appendix B.

5.6 Industrial Waste

Industrial waste generated at the WVDP include excess and spent non-hazardous chemicals and materials such as antifreeze, asbestos, organic contaminated aqueous solutions, absorbents and oil, concrete, and oil filters. Industrial wastes, while neither hazardous nor radioactive, are not suitable for disposition to sanitary waste landfills. Spent ethylene glycol (radiator coolant) solutions are currently being collected for recycling.

The amount of industrial waste generated in 1996 is quantified in Appendix C. Specific activities that reduced the amount of industrial waste generated are delineated in Appendix B.

5.7 Sanitary Waste

Sanitary waste generated at the WVDP include garbage category materials resulting from office, housekeeping, construction, and maintenance activities. Sanitary waste are not hazardous or radioactive and are suitable for disposition at landfills. Paper, metal, and cardboard recycling minimize the volume of sanitary waste that is dispositioned to landfills.
The amount of sanitary waste generated in 1996 is quantified in

Appendix C. Specific activities that reduced the amount of sanitary waste generated are delineated in Appendix B.

6.0 ELEMENTS OF POLLUTION PREVENTION

6.1 Recycling Programs

Various materials are recycled through WVDP's recycling programs. Throughout CY 1996, 504 tons of materials such as paper, metal, toner cartridges, oil, batteries, and wooden pallets were successfully recycled or reused. The amounts for 1996 recycled materials are shown in Table 2.

6.2 Pollution Prevention Opportunity Assessments

A PPOA is the primary mechanism used for identifying and analyzing activities for WMin/PP opportunities, and provides the basis for developing and prioritizing PP options. These assessments on waste generating activities are performed by a team of individuals selected for their process knowledge, purchasing and material inventory knowledge, regulatory, and PPOA expertise. Individuals with expertise in other areas may be added to the team depending upon the nature of the process being assessed. A PPOA is a systematic approach of identifying materials entering, the pollutants and wastes exiting, and the activities that make up a waste generating process. Potential WMin/PP opportunities are identified, evaluated, and prioritized according to environmental, health, safety, and economic criteria. Once WMin/PP opportunities are identified, they are evaluated and feasible opportunities are implemented.

Guidance worksheets are available from WMTS to support PPOA implementation. In general, the worksheets explain how to identify and prioritize hazardous materials and waste streams, set goals, select a team, brainstorm ideas, rank WMin/PP initiatives, and begin implementation. The guidance worksheets are consistent with the objectives of DOE guidance, Allied Signal Aerospace (Kansas City Division) Process Waste Assessment Training, and the EPA Waste Minimization Opportunity Assessment Manual.

6.3 Affirmative Procurement Program

To comply with the requirements of Section 6002 of RCRA and Executive Order 12873, "Federal Acquisition, Recycling, and Waste Prevention", a Recovered Materials Preference Program was included in WV-620, "Purchase Requisitions and Supplements". The program follows the EPA guidelines which designate specific items containing recovered materials which WVDP must purchase to the maximum extent practicable. The 24 EPA designated items are as follows:

Construction Materials : cement and concrete containing fly ash, building insulation, cement and concrete containing blast furnace slag, carpet, floor tiles, laminated paperboard, patio block, structural fiberboard

Landscape Products : hydraulic mulch, yard trimmings compost

Non-Paper Office Products : binders, office recycling containers, office waste receptacles, plastic desktop accessories, plastic trash bags, toner cartridges

Paper Products (which include): coated printing and writing paper, bristols (file folders, index cards, tags, tickets), newsprint, paperboard and packaging products, tissue products, uncoated printing and writing paper

Parks and Recreation : playground surfaces, running tracks

Transportation Products : traffic cones, traffic barriers

Vehicular Products : retread tires, re-refined lubricating oils, reclaimed engine coolant

Specific preference standards for these items are outlined in WV-620. For these items, preference will be given to purchasing products containing recovered materials versus products made with virgin materials (when adequate competition exists, and when price, performance and availability are equal).

Any decision not to procure items meeting the EPA guideline standards must be justified in writing and submitted with the purchase requisition. Executive Order 12873 requires that 100 percent of the designated items must meet or exceed EPA guideline standards unless written justification is provided that the item is: 1) not available; 2) not available within a reasonable time frame; 3) does not meet appropriate performance standards; or 4) is only available at an unreasonable price (i.e. the cost of a recycled product is greater than that of a product made with virgin materials).

The Affirmative Procurement Program requires each facility to complete an Annual Report for the program. This report is completed by WMTS with information supplied by Procurement & Support Services.

6.4 Procurement Control

An on-site materials procurement/tracking system for controlling hazardous materials purchased and hazardous wastes generated, has been implemented. According to WV-620, "Purchase Requisitions and Supplements", prior to purchase approval, a waste generation review form must be completed and reviewed to ensure that WMin/PP opportunities have been considered and that a Treatment, Storage and Disposal Facility is available for potential waste streams prior to

procurement. A detailed site operating procedure, SOP 300-07, "Waste Status Determination," directs the user or waste generator to find ways to use, re-use, or recycle materials (on-site or off-site) to reduce the quantity of waste generated that must be treated (on-site or off-site).

6.5 Inventory Management

A procedure is being used for strict inventory control over nonhazardous and hazardous materials to support a "first in, first out" process to ensure chemical shelf lives are not exceeded. Responsibilities for procedure compliance have been assigned to warehouse personnel.

7.0 INFORMATION AND TECHNOLOGY EXCHANGE

7.1 Information Exchange and Outreach

Communicating WMin/PP successes and information to employees and the community through outreach and public relations has helped establish public confidence and trust, increase awareness of environmental issues, and promote the reduction of waste. Organizing and attending activities such as Earth Day and publishing information regarding the site's WMin/PP efforts will enhance awareness.

7.2 Technology Transfer

The WVDP is currently represented on a number of inter-agency technical working groups and committees which have WMin as part of their charters. WVNS is currently involved in the Pollution Prevention Subcommittee for Westinghouse Government-Owned-Contractor-Operated (GOCO) facilities.

The purpose of the Pollution Prevention Subcommittee is to provide Westinghouse waste management representatives an opportunity to discuss and interchange issues of concern on WMin practices and programs at DOE facilities. The scope includes radioactive waste, RMW, HW, and non-regulated wastes as deemed appropriate. In addition, broad technical issues such as the utilization of Anti-C clothing and equipment, recycling, source reduction via substitution, input control of hazardous materials, research and development (R&D) needs, process changes, and the like can be addressed. The subcommittee commenced its activities in 1994, and participates in bi-monthly teleconference calls.

WVNS routinely interacts with other DOE sites and national laboratories for transfers of various technologies, including waste minimization and pollution prevention.

7.3 Research and Development

Proposals for R&D are expected to arise from the PPOAs as described in section 6.2. Some options may require development work before implementation. The assessments also may identify process inefficiencies which offer potential for significant waste reduction, but specific process modifications may require R&D work before implementation can be scheduled.

8.0 PROGRAM STATUS

8.1 Program Evaluation

The WMin/PP Plan will be reviewed and updated by the WMTS group. The plan will be reviewed annually, and revised biennially. Areas evaluated to determine the program performance will include:

- amount of waste reduction in the previous year via reuse, source reduction, and recycling
- waste tracking system effectiveness, evaluating annual changes in waste volume or mass for LLW, RMW, HW, industrial and sanitary waste streams
- process changes and/or modifications

This information will be obtained from the Annual Waste Management Plan, the Annual Hazardous Waste Report, PPOAs, and tracking and adjunct reporting required to evaluate the waste management goals at the WVDP.

8.2 Program Accomplishments

An executive level summary of the waste reduction accomplishments for 1996 is located in Appendix B.

8.3 Waste Management Costs

A Waste Management Cost Information System will be developed to determine waste management costs. The data provided by this program will be utilized by WMTS as a tool to determine the benefits associated with WMin/PP. This system will be formulated by September 1, 1997.

TABLE 1
WASTE REDUCTION GOALS SUMMARY

Routine Waste Reduction Goal Summary

Waste Type	Baseline Values	Annual Reductions (CY)					
		1994	1995	1996	1997	1998	1999
Low-Level	50,626 ft^3	10%	8%	8%	8%	8%	8%
Mixed	2,618 Kg	10%	8%	8%	8%	8%	8%
Hazardous							
Non-Vit	4,545 Kg	10%	8%	8%	8%	8%	8%
Vit	61,892 Kg*	-	-	-	9%	9%	10%
Industrial							
Non-Vit	22,222 Kg	10%	4%	4%	4%	4%	4%
Vit	76,494 Kg*	-	-	-	6%	6%	6%
Sanitary	1,159 tons	2%	4%	4%	4%	8%	8%

* Baseline values derived from full-scale, radioactive operations in 1996

NOTE: These annual reductions support long term reduction goals of 50% for radioactive, mixed, and hazardous wastes; and 30% for industrial and sanitary wastes by December 31, 1999.

TABLE 2

RECYCLING STATUS SUMMARY
CALENDAR YEAR 1996

Type of Recyclable	Mass
Paper Products	
Office Paper	447,447 lb
Corrugated Cardboard	220 lb
Aluminum Beverage Cans	529 lb
Styrofoam Packing Peanuts	220 lb
Scrap Metals	
Stainless Steel	9,833 lb
Iron	217,087 lb
Aluminum	10,229 lb
Toner Cartridges	1,742 lb
Batteries	5732 lb
Engine Oils	1,786 lb
Metal and Plastic Drums	142,682 lb
Galvanized Steel	99,935 lb
Wooden Pallets	34,656 lb
Insulation	33,995 lb
Office Supplies	2,205 lb
Metal Oil Filters	507 lb

TABLE 3

HAZARDOUS WASTE GENERATION DATA FOR CY 1996

Waste Stream ID Number	Description	1996 NYSDEC Hazardous Waste Report GM PAGE NO.	Waste Source	Code(s)	Major Components	Type	Mass (ton)
1*	Spent Acidic/Caustic Solutions	23	Cold Laboratories	D002	Nitric Acid, Sodium Hydroxide	HW	1.34
2*	Spent Acidic/Caustic Solutions	2	Hot Lab	D002	Nitric Acid, Sodium Hydroxide, Radionuclides	RMW	4.08
8	PCB Oil and Debris	9	Operations	B005,B007	PCB Contaminated Capacitors	RMW	0.61
11	Debris, Equipment, Paint Chips	7	Operations	D007,D008	Lead and Chrome	RMW	0.79
15a	Vitrification Process Neutralization of Acidic/Caustic Solutions in Tank 65D-01	22	Operations	D002	Nitric Acid, Sodium Hydroxide	HW	28.35
15b	Vitrification Overhead Liquids	32	Operations	D002,D007	Sodium Hydroxide and Chromium	HW	39.65
16	Spent Fluorescent Light Bulbs	29	Site	D006,D008,D009	Cadmium, Lead, Mercury	HW	0.90
18	Liquid Plant Waste	25	Operations	D001,D002,D006, D007,D008,D009 and D010	Isopropanol, Acetic Acid, Chromium	HW	1.26
20	Glass/Refractory	39	Operations	D007	Chromium	HW	1.87
21	Simulated Vitrification Feed	40	Testing	D002,D005,D007	Nitric Acid, Barium, Chromium	HW	7.31
22	Refractory Debris Wastewater	41	Operations	D002,D007	Aluminum Hydroxide , Chromium	HW	2.11
23	Lead	16	Sorting	D008	Lead	RMW	0.80
Remainder**	Various	Various	Various	Various	Various	HW/ RMW	6.92
TOTAL							95.99 tons

* This waste was treated via elementary neutralization and dispositioned to permitted on-site treatment facilities.

** This "remainder" category has been deemed inconsequential and amounts to 7.2 percent of the total HW and RMW generated during 1996.

Company Name:	**EPA ID Number**
West Valley Demonstration Project/U.S. Department of Energy	NYD 980779540

HAZARDOUS WASTE GENERATION SUMMARY

Table 4

Waste Stream ID Number	Name of Waste	Source of Generation	Disposal Method *	Quantity of Waste Generated (tons)				Indices (lb waste generated /lb product produced)				
				1993	1994	1995	1996	Theo	1993	1994	1995	1996
1	Acidic and Caustic Solutions	Cold Anal. Labs	A	4.32	2.37	2.42	1.34	N/A	N/A	N/A	N/A	N/A
2	Acidic Solution and Equipment Cleaning	Hot Anal. Labs	A,G	0.72	1.00	0.84	4.08	N/A	N/A	N/A	N/A	N/A
3	Zinc Bromide	Window Refurbishment	A,C	0.00	1.29	4.14	0.05	N/A	N/A	N/A	N/A	N/A
4	Lube Oil	Equip. Maintenance	E	1.46	1.29	0.00	0.12	N/A	N/A	N/A	N/A	N/A
6	Developer Solution	Reproduction	D	0.50	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A
8	PCB Contaminated Items	Sampling/D&D Ops	E	0.63	0.00	13.96	0.61	N/A	N/A	N/A	N/A	N/A
9	Acidic Decon Solution	Vit Testing	A, B	0.98	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A
11	Debris, Tools, Equipment, Paint Chips	Operations	C, E	9.55	0.83	1.40	0.79	N/A	N/A	N/A	N/A	N/A
12	Mercury Contaminated Equipment**	Maintenance	D	3.15	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A
13	Out of Date Chemicals	Labs and Warehouse	A,B,C,D	0.77	0.24	0.36	0.15	N/A	N/A	N/A	N/A	N/A
14	Unused Decon Solution **	Warehouse	A,E	0.62	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A
15	Vitrification Liquids	Operations	D	0.00	2.09	49.35	68.00	N/A	N/A	N/A	N/A	N/A
16	Spent Fluorescent Bulbs	Site	D	0.00	1.40	1.16	0.90	N/A	N/A	N/A	N/A	N/A
17	Mercury Contam. Debris	Operations	D	0.00	0.27	0.45	0.02	N/A	N/A	N/A	N/A	N/A
18	Liquid Plant Waste	Operations	A,B,D	0.00	0.36	1.14	1.26	N/A	N/A	N/A	N/A	N/A
19	Spent Filter Media	Fuel Pool	C	0.00	0.00	2.12	0.62	N/A	N/A	N/A	N/A	N/A
20	Glass/Refractory	Operations	C	0.00	0.00	0.00	1.87	N/A	N/A	N/A	N/A	N/A
21	Vitrification Feed	Testing	A,B,C,D	0.00	0.00	0.00	7.31	N/A	N/A	N/A	N/A	N/A
22	Refractory Wastewater	Operations	A,B	0.00	0.00	0.00	2.11	N/A	N/A	N/A	N/A	N/A
23	Lead	Sorting	D	0.00	0.00	0.00	0.80	N/A	N/A	N/A	N/A	N/A

* DISPOSAL METHODS: A Neutralization, B Chemical Precipitation, C Cement Solidification, D Thermal Treatment , E Incineration, F Land Disposal, G Vitrification

** Episodic Waste Stream

Company Name:	**EPA ID Number**
West Valley Demonstration Project/U.S. Department of Energy	NYD 980779540

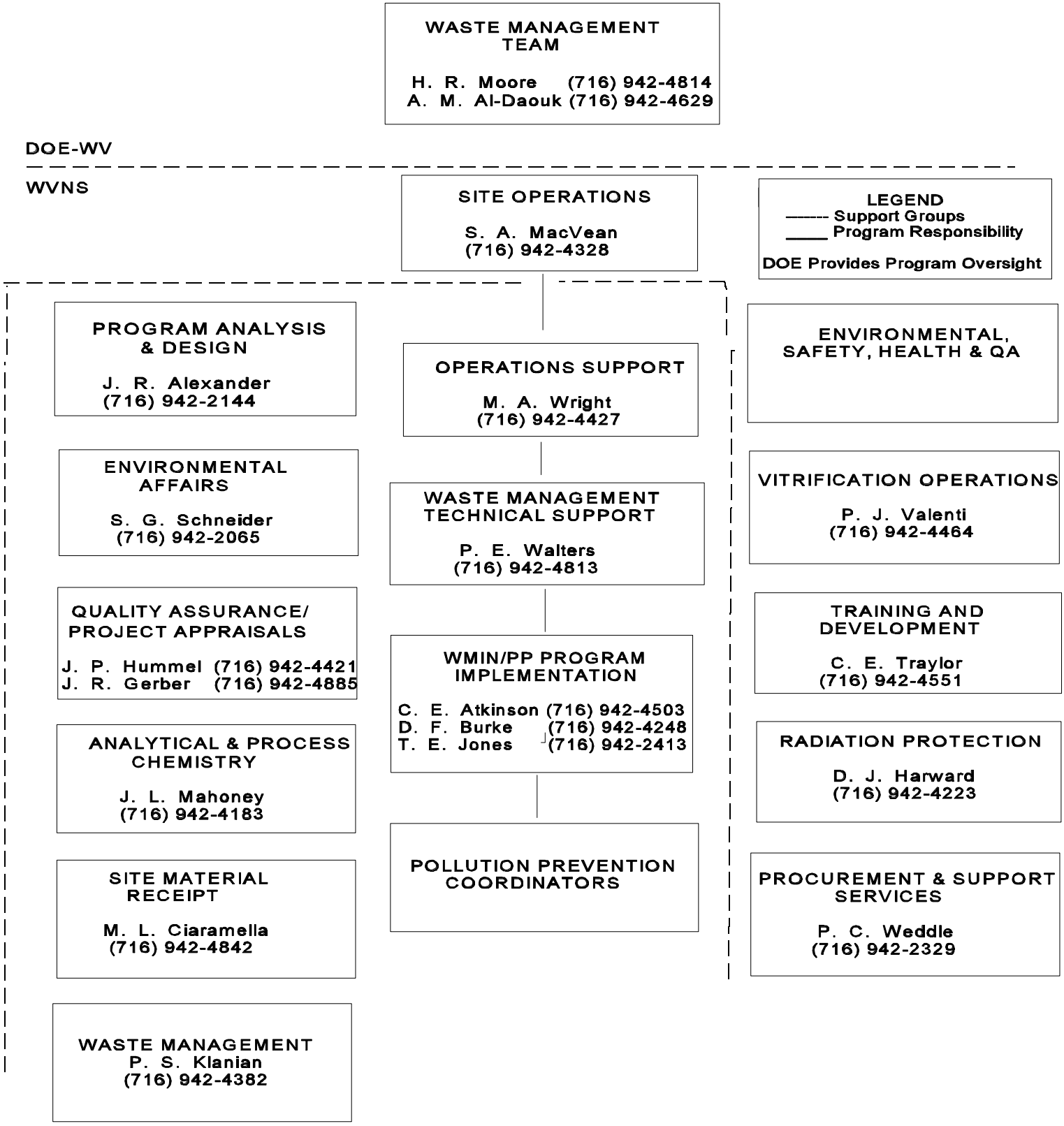
HAZARDOUS WASTE REDUCTION PROGRAM

Table 5

Waste Stream ID Number	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method Used to calculate *ROI	ROI (est)	Goal Date	Remarks
1	Acidic and Caustic Solutions	Cold Anal. Lab	Minimize acid washing and rinsing of lab equipment	0.20	NPV	NA	NA	Implementation Continues
2	Acidic Solution and Equipment Cleaning	Hot Anal. Lab	Minimize acid washing and rinsing of lab equipment	0.40	NPV	NA	NA	Implementation Continues
4	Lube Oil	Maintenance	Decrease frequency of preventive maintenance	0.10	NPV	NA	NA	Implementation Continues
9	Acidic Decon Solution	Vit Operations	Use decon solution in vitrification feed	132.00	NPV	NA	1997	Implementation started in 7/96 (81.39 tons solution were recycled in 1996)
16	Spent Fluorescent Light Bulbs	Site	Purchase and use non-hazardous, fluorescent, light bulbs which can be disposed as sanitary waste. Discontinue recycling of fluorescent bulbs after current stock of hazardous bulbs has been utilized and dispositioned to a recycle vendor	1.00	NPV	NA	1998	Implementation planned in 1997
23	Lead	Radioactive Waste Storage	Legacy, mixed waste lead is segregated and decontaminated with solid, carbon dioxide to produce a non-radioactive, recyclable metal	6.00	NPV	NA	1998	Implementation started in 12/96

*ROI = Return on investment
AC = Annualized cost
IRR = Internal rate of return
NPV = Net present value
PP = Pay back period
PI = Profitability index

FIGURE 1
ORGANIZATIONS RESPONSIBLE FOR WMIN/PP AT WVDP



WASTE MINIMIZATION/POLLUTION PREVENTION PROGRAM TRACKING FORMS

GENERATOR WASTE MINIMIZATION REPORTING FORM

This report must be completed by organizations that engaged in waste generating activities during the reporting period. This information will be used by WVDP to prepare reports required by the Department of Energy (DOE), New York State and the Environmental Protection Agency (EPA).

Facility/Waste Generating Activity: _____

Facility/Activity Contact * Name/Phone: _____

Cognizant Supervisor/Manager: _____

Dates covered by this Report: _____

* Contact should be familiar with details of facility or waste generating activity being reported.

Instructions

Photocopy and complete this report for each waste stream minimized. Please enter "UNKNOWN" if the information requested is not known or is not available; enter "N/A" if the information requested is not applicable. Indicate if the information is an estimate.

Waste Stream Name: _____

Type of Stream:

____ HLW ____ TRU ____ TRU-Mixed ____ LLW ____ LLW-Mixed

____ Hazardous ____ Industrial ____ Sanitary

Waste form/physical state

____ Liquid ____ Gas _____ Solid ____ Sludge ____ Slurry

Waste source description

Is the waste a result of: ____ Routine operations such as production, service or maintenance activities, or waste management

____ Equipment decommissioning/replacement

____ Materials/product disposal

____ Cleanup activities (specify)

____ Other non-routine sources (specify)_____

WASTE MINIMIZATION ACTIVITY INFORMATION

1. Please provide a complete narrative of the waste minimization activity.
Include the reason for initiating the activity, what was reduced and the actions that enabled the reduction of waste.

_____ _____
_____ _____
_____ _____
_____ _____

2. Waste minimization approach.
What method was used to reduce the volume, mass, or toxicity of the waste? (Check all applicable boxes)

____Source Reduction ____Reuse ____Recycling ____Treatment

Explain treatment method (neutralization, compaction, etc.)

_____ _____
_____ _____
_____ _____
_____ _____

3. Waste quantity avoided
Provide volume information (m^3 or ft^3) for radioactive waste and mass information (kg or lbs) for hazardous, mixed, industrial, and sanitary waste.

Quantity Avoided _____

6. Cost Information

What was the cost to implement this waste minimization activity? $_____

Did this waste minimization activity result in a Cost Savings? ____YES ____NO

If yes, please indicate estimated cost savings $_____

[ ] No waste reduction was achieved during this period. (**Do not** complete the Generator Minimization Reporting Form).

Prepared by: _____
Originator Date

Approved by: _____
Cognizant Manager Date

CY 1996 WASTE MINIMIZATION ACCOMPLISHMENT DATA SUMMARY

POLLUTION PREVENTION ACTIVITY	ACCOMPLISHMENTS	WASTE REDUCTION (WASTE TYPE)	ANNUAL COST SAVINGS
WEST VALLEY NUCLEAR SERVICES			
Source Reduction/Soil Recycling/Metal Storage Boxes	Eight soil boxes were emptied and the soil surveyed. The soil was released to a clean, spoils pile. The boxes were reused.	12.69 cubic meters (low-level)	$28,400
Source Reduction/Ground Water	Ground water in-leakage into a high-level waste storage tank pan and vault was approximately 500 to 800 gallons per day. The water came in contact with radioactive contamination and had to be treated as low-level waste. Grouting around the pit riser effectively sealed the path to the tank vault.	567.81 cubic meters (low-level)	$15,000 (one time)
Source Reduction/Anti-C Clothing and Equipment	Non-radioactive, yellow, Anti-C clothing and equipment, previously designated, stored, and disposed of as radioactive waste, were shredded and disposed of as sanitary waste. The shredding was necessary to render the materials unrecognizable and avoid confusion with yellow materials used in radioactive areas.	4.82 cubic meters (low-level)	$9,575
Source Reduction/Paper	The number of drawings was minimized by using a common file; Standard Operational Procedures and System Description distributions were reduced by using technical library sets; reduced size drawings were also used.	2.45 metrics tons (sanitary)	$6,426
Source Reduction/Plastic Bags	Washable, nylon laundry bags were substituted for plastic bags to transport "cold" towels and coveralls to the laundry.	4,420 plastic bags (sanitary)	$3,058
Source Reduction/Absorbents	Absorbed hydrocarbons and ethylene glycol were certified for disposal as sanitary waste rather than industrial waste.	0.34 metric ton (industrial)	$20,000
Source Reduction/Oil	Oil in selected pieces of equipment was sampled between oil changes to monitor the condition, thus extending the period of time between changes.	1.14 cubic meters (industrial)	$1,200
Substitution/Organic Solvent	Uranium and Strontium-90 analyses were modified to eliminate the need to use flammable solvents such as acetone and methyl isobutyl ketone, in routine analyses.	1.0 cubic meter - estimate (mixed)	$3,500
Recycling/Drums	Metal and plastic drums were cleaned and emptied. 55-gallon (673) steel drums were reused on-site, while 2,180 drums were returned to vendors for deposit and reuse or recycling.	64.72 metric tons (sanitary)	$41,508

POLLUTION PREVENTION ACTIVITY	ACCOMPLISHMENTS	WASTE REDUCTION (WASTE TYPE)	ANNUAL COST SAVINGS
WEST VALLEY NUCLEAR SERVICES			
Recycling/Toner Cartridges	Laser Jet printer toner cartridges were returned to the vendor for recycling.	0.79 metric ton (industrial) (580 cartridges)	$38,392
Recycling/Office Supplies	As a result of personnel moves and elimination of trailers, large quantities of excess office supplies were sent to the warehouse for an office swap. Savings resulted from not having to purchase new items.	1.00 metric ton - estimate (sanitary)	$34,472
Recycling/Metal & Insulation	When waste storage structures were dismantled, aluminum, galvanized steel, and insulating material were recycled.	4.63 metric tons aluminum (sanitary) 45.33 metric tons galvanized steel 76.50 cubic meters insulation	$9,000 (one time)
Recycling/Metal	Scrap carbon steel and stainless steel were collected and sold to a metal recycle vendor.	102.93 metric tons (sanitary)	$8,700
Recycling/Wood Pallets	Wood pallets (770) were sent to a vendor for recycling instead of being disposed of as sanitary waste.	15.72 metric tons (sanitary)	$3,500
Recycling/Beverage Cans	Beverage cans were collected and returned for $.05 deposit.	0.24 metric ton (sanitary) (32,015 cans)	$1,601
Recycling/Telephones	Used telephones were collected and traded in for credit.	200 telephones (sanitary)	$1,000
Recycling/Cardboard Boxes & Styrofoam Packing	Cardboard shipping boxes and styrofoam packing from deliveries were reused for off-site shipments. Excess styrofoam packing was given to employees for reuse or to a vendor for recycling.	0.20 metric ton (sanitary)	$936
Recycling/Oil Filters	Used oil filters were crushed with a hydraulic crusher, draining residual oil and allowing filters to be recycled for their metal.	0.23 cubic meters (industrial or hazardous)	$216
Recycling/Computer Equipment, Software and Manuals	Surplus computer equipment (9 printers and 44 complete systems), software (63 varied packages), and user manuals were donated to various schools via our Gift Program.	204 surplus computer related items (sanitary)	*

***** The school systems realized the cost savings from the Gift Program.

2/25/97 (ACCOM-96.DOE)

CY 1996 WASTE REDUCTION STATUS SUMMARY

LOW-LEVEL WASTE (LLW)

Goal: Reduce LLW generation by 26% (the 1994 & 1995 cumulative goal was 18%), compared to 1993 waste generation, to produce less than 37,463 ft^3 at the end of CY 1996

Status: 4,542 ft^3 of non-legacy, non-vitrification LLW were generated during CY 1996. There were 5,905 ft^3 of legacy and 728 ft^3 of Vitrification LLW generated

Baseline: 50,626 ft^3

Accomplishment: Non-legacy, non-vitrification, LLW reduction for CY 1996 was 91% and exceeded the acceptable goal value by 32,921 ft^3

MIXED WASTE (MW)

Goal: Reduce MW generation by 26% (the 1994 & 1995 cumulative goal was 18%), compared to 1993 waste generation, to produce less than 1,937 Kg at the end of CY 1996

Status: 870 Kg of non-legacy, non-vitrification MW were generated during CY 1996. There were 270 Kg of legacy and 28 Kg of Vitrification MW generated

Baseline: 2,618 Kg

Accomplishment: Non-legacy, non-vitrification, MW reduction for CY 1996 was 67% and exceeded the acceptable goal value by 1,067 Kg

HAZARDOUS WASTE (HW)

Goal: Reduce HW generation by 26% (the 1994 & 1995 cumulative goal was 18%), compared to 1993 waste generation, to produce less than 3,363 Kg at the end of CY 1996

Status: 1,568 Kg of non-legacy, non-vitrification HW were generated during CY 1996. There was no legacy waste generated and 68,488 Kg of Vitrification HW were generated

Baseline: 4,545 Kg

Accomplishment: Non-legacy, non-vitrification, HW reduction for CY 1996 was 66% and exceeded the acceptable goal value by 1,795 Kg

CY 1996 WASTE REDUCTION STATUS SUMMARY (Cont.)

INDUSTRIAL WASTE (IW)

Goal: Reduce IW generation by 18% (the 1994 & 1995 cumulative goal was 14%), compared to 1993 waste generation, to produce less than 18,222 Kg at the end of CY 1996

Status: 11,176 Kg of non-legacy, non-vitrification IW were generated during CY 1996. There were 290 Kg of legacy and 64,726 Kg of Vitrification IW generated

Baseline: 22,222 Kg

Accomplishment: Non-legacy, non-vitrification, IW reduction for CY 1996 was 50% and exceeded the acceptable goal value by 7,046 Kg

SANITARY WASTE (SW)

Goal: Reduce routine sanitary waste generation by 10% (the 1994 & 1995 cumulative goal was 6%), compared to 1993 waste generation, to produce less than 1,043 tons at the end of CY 1996

Status: 646 tons of routine, non-legacy, non-vitrification SW were generated during CY 1996. 1 ton of legacy, 260 tons of vitrification, and 5 tons of non-routine LSA-3 SW were also generated

Baseline: 1159 tons

Accomplishment: Routine, non-legacy, non-vitrification, SW reduction for CY 1996 was 44% and exceeded the acceptable goal value by 397 tons

WASTE MINIMIZATION/POLLUTION PREVENTION DRIVERS
Orders/Policies

Driver	Order or Policy Number	Effect
General Environmental Protection Program	DOE 5400.1	Requires WMin/PP Plans, Annual Waste Reduction Reports, and a Pollution Prevention Awareness Program
Hazardous and Radioactive Mixed Waste Program	DOE 5400.3	Adds RCRA requirements to DOE environmental programs
Radioactive Waste Management	DOE 5820.2A	Requires Waste Management Plans including actions to minimize radioactive waste generation
Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements	Executive Order (EO) 12856 (August 3, 1993)	Requires development of a pollution prevention strategy and agency development of a 50 percent reduction goal in toxic chemical releases by the end of 1999
Federal Acquisition. Recycling, and Waste Prevention	EO 12873 (October 21, 1993)	Promotes reductions in waste generation through recycling and the use of recycled and energy efficient materials
Procurement Requirements and Policies for Ozone-Depleting Substances	EO 12843 (April 21, 1993)	Requires that Federal Agencies minimize and allow for phaseout of Class I and II ozone-depleting substances
Federal Use of Alternative Fueled Vehicles	EO 12844 (April 21, 1993)	Stimulates the availability, acquisition, and use of alternatively-fueled vehicles for Federal agencies
Requiring Agencies to Purchase Energy Efficient Computer Equipment	EO 12845 (April 21, 1993)	Requires that all acquisitions of microcomputers meet "EPA Energy Star" requirements for energy efficiency.

WASTE MINIMIZATION/POLLUTION PREVENTION DRIVERS
Regulatory

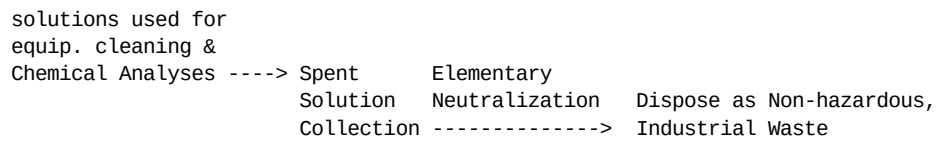
Driver	Law	Effect
Federal Procurement Guidelines	Resource Conservation and Recovery Act (RCRA)	Encourages procurement of recovered materials by the Federal government
Generator Manifest Certification	RCRA	Requires generator to put in place a hazardous waste minimization program
Generator Biennial Report Certification	RCRA	Requires generator to put in place a hazardous waste minimization program
Liability Insurance Requirements	RCRA	Generator and facility owners and operators reduce liability by reducing waste
Land Disposal Restrictions	RCRA	Increases the cost of waste management
Exclusion to Toxicity Characteristic	RCRA	Minimizes Chlorofluorocarbon (CFC) venting and encourages recycling
Waiver of Sovereign Immunity under RCRA	Federal Facilities Compliance Act (FFCA)	Government is subject to all RCRA requirements with a 3 year delayed effective date for mixed waste storage
Mixed Waste Minimization Reporting	FFCA	National inventory of all mixed waste including description of waste minimization actions
Toxic Release Inventory Reporting	Emergency Planning and Community Right-to-Know Act (EPCRA)	Establish reporting requirements for the use, storage, and on-site and off-site transfers of hazardous and toxic chemicals
National Policy	Pollution Prevention Act (PPA)	Declared pollution prevention as the first choice in environmental management
Toxic Release inventory Reporting	PPA	Expands SARA 313 reporting requirements to include source reduction and recycling information
Increased Reporting Requirements	PPA	Increases public access to information, stimulating citizen enforcement and holds industry to stricter standards

Driver	Law	Effect
CERCLA Financial Liability	Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	Generators reduce future liability by reducing waste
National Ambient Air Quality Standards	Clean Air Act (CAA)	Promotes cutting emissions of six hazardous air pollutants
New Source Performance Standards	CAA	New plants must conform to strict emission requirements
Phased-In Requirements	CAA	Firms must meet new, more restrictive air emission standards
Early Reductions Program	CAA	Compliance extensions for voluntary early reductions of hazardous air pollutants
Maximum Achievable Control Technology (MACT)	CAA	Directs EPA to consider pollution prevention technologies when selecting MACT
Clean Fuel Fleet Program	CAA	Requirements to meet clean-fuel fleet vehicle emissions standards
Protection of Stratospheric Ozone	CAA	Phase-out of CFCS, halons, and carbon tetrachloride by 2000; limit on emissions of ozone-depleting substances during the servicing, use and disposal of equipment containing those substances
Minimization Certification	Clean Water Act (CWA)	Requires a plan for industrial firms to diminish the volume and toxicity of their hazardous discharges
Significant New Use Notification	Toxic Substance Control Act (TSCA)	Makes firms legally responsible to EPA for voluntary waste minimization commitment
Bans on Chemical Substances	TSCA	Eliminates feedstocks responsible for certain waste streams
Restricted Waste Minimization	Federal and State Facility Compliance Agreement (FSFCA)	Requires minimization of the generation of restricted wastes prohibited from land disposal
Research and Development Tax Credits	Tax Reform Act (TRA)	Provides for a tax credit for increasing investment in research and development of processes and products that reduce waste

HAZARDOUS WASTE STREAM AND WASTE MANAGEMENT INFORMATION

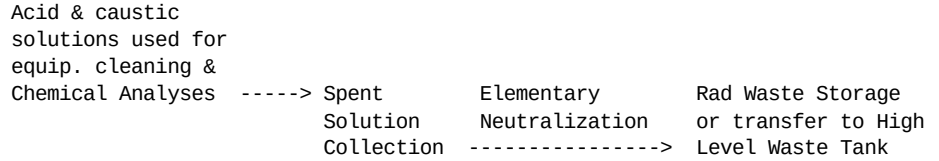
The following information with Tables 3, 4, and 5, support NYSDEC reporting.

1. Waste Stream #1 (acid/caustic solution) was not radiologically contaminated and was generated by the "Cold" Analytical Laboratories via equipment cleaning, and sample disposal.



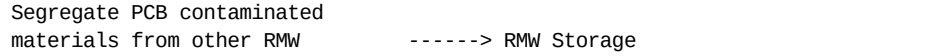
The mass of acidic solution generated during 1996 decreased by a significant amount (1.34 versus 2.42 ton) when compared to 1995 because of the change from Cold vitrification test support to actual “hot” operations support.

2. Waste Stream #2 (acidic/caustic solution) was radiologically contaminated and was generated by the "Hot" Analytical Laboratories.



The mass of the waste stream generated in 1996 was 4.08 tons. It increased from 0.84 ton in 1995 because of the high level of effort that was scheduled for vitrification testing and "hot" operations.

3. Waste Stream #8 (PCB Oil and Debris) was radiologically contaminated and was generated by segregating PCB contaminated materials from Plant wastes.



The mass of this waste stream segregated during 1996 was 0.61 ton. It was significantly less than the 13.96 tons segregated during 1995 efforts.

4. Waste Stream #11 (debris, tools, equipment, paint chips) is radiologically contaminated and was generated in operation areas of the plant.

The mass of the waste stream was 0.79 tons during 1996. It decreased from the 1.40 tons generated in 1995.

5. Waste Stream #15 (vitrification liquids), with and without chromium was not radiologically contaminated and was generated in the vitrification melter and feed off-gas systems.

Melter Off-gas/ Feed Slurry ----> Vitrification Processing ----> Condensate -----> Dispose as Hazardous Waste

The generation mass for this waste stream was 68.00 tons in 1996, while 49.35 tons were generated in 1995. The increase was due to the start-up of full scale vitrification operations.

6. Waste Stream #16 (spent fluorescent light bulbs) containing mercury and cadmium was not radiologically contaminated and was generated in various site areas.

Collect spent bulbs from various facilities on-site --------> Hazardous Waste Storage -------> Disposition to a Recycle Vendor

The generation mass for this recyclable waste stream was 0.90 ton in 1996 and 1.16 ton in 1995. We plan to start purchasing non-hazardous fluorescent lights in 1997.

7. Waste Stream #18 (liquid plant wastes) containing alcohols, acids, and chromium was not radiologically contaminated and was generated in various clean, operational areas.

Collect liquid wastes from various non-rad areas on site --------> Hazardous Waste Storage -------> Dispose as Hazardous Waste

The generation mass for this waste stream was 1.26 tons in 1996, while 1.14 tons were generated in 1995.

8. Waste Stream #20 (glass/refractory) containing chromium, was not radiologically contaminated and resulted from mini-melter repairs during cold testing operations.

Remove refractory bricks from mini-melter to allow repair work ------> Hazardous Waste Storage ------------> Dispose as Hazardous Waste

The generation mass for this waste stream was 1.87 tons in 1996.

9. Waste Stream #21 (simulated vitrification feed) containing chromium, was not radiologically contaminated and was composed of glass formers used in the mini -melter.

Collect off-spec. glass formers from mini-melter operation ------> Hazardous Waste Storage ------------> Dispose as Hazardous Waste

The generation mass for this waste stream was 7.31 tons in 1996.

10. Waste Stream #22 (refractory debris wastewater) containing chromium, was not radiologically contaminated and resulted from full-scale melter rebricking operations.

Collect wastewater generated during melter rebricking -----> Hazardous Waste Storage ---------> Dispose as Hazardous Waste

The generation mass for this waste stream was 2.11 tons in 1996.

11. Waste Stream #23 (lead) was radiologically contaminated, legacy waste that was segregated via sorting operations from stored RMW.

Segregate lead from RMW in the Sorting Facility -------> Mixed Waste Storage

The mass segregated for this waste stream was 0.80 ton in 1996.

Since the generation of the aforementioned waste streams are not associated with any production processes, there are no quantities of production output on which to index the waste production. For this reason, the resultant indices would be zero and not meaningful. Therefore, indices are not included in Table 6 of this document.

Regarding costs for managing CY 1996 wastes, the following are noted:

1. No meaningful cost information for managing RMW could be generated since these wastes are stored on-site and amount to less than 0.1% of the total radioactive waste inventory and it would be very difficult to segregate the costs.

2. Cost data for managing the major corrosive, hazardous, waste streams include:

Waste Stream(s)	Management Consideration(s)	Annual Cost ($)
Waste Streams #1, 15 & 22 (acidic/caustic solutions)	Sampling, Analysis, Characterization, Neutralization & Disposal	50,000

Technical and economic considerations for waste streams #1, 2, 4, 9, 16 and 23 were evaluated. Estimated 1996 waste reductions are presented in Table 5. The following waste reduction options were considered:

1. substitution of non-toxic or less toxic inputs which result in a reduction in the volume or toxicity of such waste;

2. reformulation or redesign of end products to eliminate production inputs or production processes that result in the generation of such waste;

3. modification or redesign of technologies or equipment which result in a reduction in the volume or toxicity of the waste;

4. changes in materials usage, handling and storage practices, including improved inventory control, preventive maintenance, spill and leak prevention and waste segregation, which will reduce the volume or toxicity of such waste;

5. the use of closed loop reclamation, reuse or recycling processes or technologies which directly recycle such wastes back into the system and;

6. the use of on-site or off-site recycling technologies that reduce the amount of such waste that must be treated or disposed of.

For acidic waste streams #1 and 2, it was determined that except for item four (changes in material usage), the waste reduction options were not applicable. Continued minimization of acid washing and rinsing of lab and sampling equipment will further reduce the generation of these waste streams. The treatment of acidic wastes by elementary neutralization is still the preferred waste management technique.

Waste reduction options were also considered for the lube oil waste stream #4. It was determined that item 4 (changes in preventive maintenance practices) still applied to the RMW lube oil waste. By reducing the frequency of changing oil in contaminated equipment, the annual generation mass of RMW oil was significantly reduced. In 1991, oil change modifications were initiated and continued through 1996. The implementation of this waste reduction option continues to be successful.

Recycling or reuse (on-site and off-site), is a viable method of hazardous and mixed waste reduction at the WVDP. Hazardous materials such as acidic, decontamination solutions (waste stream #9) were routinely returned to the process (81.39 tons in 1996) for reuse as vitrification feed stock. Spent fluorescent light bulbs (waste stream #16) were sent to a recycler. Mercury, aluminum, glass, and phosphors were reclaimed for reuse while cadmium was segregated for disposal. We plan to purchase non-hazardous fluorescent bulbs in 1997. A project was initiated to decontaminate mixed waste lead (waste stream #23) that had either been in controlled storage or used for neutron shielding, since the initiation of the WVDP. Solid carbon dioxide pellets are being used to remove radioactive contamination via an impingement and air-sweep process. In most cases (although not all), the lead can be "free released" as recyclable metal.

The reduction options were not applicable for the remaining waste streams #8, 11, 18, 20, 21, and 22. The needs of the Project, considered with monetary and labor resources and the main Project mission, are the main criteria for determining economical feasibility at WVDP.

Hazardous wastes generated from defined sources are accumulated in Satellite Accumulation Areas (SAA) before being transported to RCRA interim status facilities which include the Interim Waste Storage Facility (IWSF) and the Hazardous Waste Storage Facility (HWSF) for storage prior to off-site disposition.

Mixed wastes are currently being stored in the IWSF and the Lag Storage Facilities.
The utilization of administrative controls, such as pre-job planning, the careful segregation of hazardous and radioactive materials, the implementation of process improvements and recycling, the efficient filling of vitrification canisters, and the use of good housekeeping practices are the main methods that ensure the elimination and reduction of RMW at the WVDP.

ACRONYMS

A&PC	Analytical and Process Chemistry
ADS	Activity Data Sheet
APP	Affirmative Procurement Program
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CSRF	Contact Size Reduction Facility
CSS	Cement Solidification System
CWA	Clean Water Act
CY	Calendar Year
D&D	Decontamination and Decommissioning
DOE	Department of Energy
DOE-WV	Department of Energy, West Valley
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FRS	Fuel Receiving and Storage
FFCA	Federal Facility Compliance Act
FSFCA	Federal and State Facilities Compliance Agreement
FY	Fiscal Year
GOCO	Government Owned - Company Operated
HAP	Hazardous Air Pollutant
HLW	High-Level Waste
HW	Hazardous Waste
HWRP	Hazardous Waste Reduction Plan
IRTS	Integrated Radwaste Treatment System
IW	Industrial Waste
LLW	Low-Level Waste
LLWTF	Low-Level Waste Treatment Facility
MOU	Memorandum of Understanding
MPO	Main Plant Operations
NDA	NRC Licensed Disposal Area
NFS	Nuclear Fuel Services
NOI	Notice of Intent
NRC	U.S. Nuclear Regulatory Commission
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSERDA	New York State Energy Research and Development Authority
OTS	Operations Technical Support
PP	Pollution Prevention
PPA	Pollution Prevention Act
PPOA	Pollution Prevention Opportunity Assessment

QA	Quality Assurance
QMM	Quality Management Manual
R&D	Research and Development
RC	Regulatory Compliance
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RMW	Radioactive Mixed Waste
RP	Radiation Protection
SAA	Satellite Accumulation Area
SSWMU	Super Solid Waste Management Unit
SW	Sanitary Waste
T&D	Training and Development
TSCA	Toxic Substance Control Act
TRA	Tax Reform Act
TRU	Transuranic
Vit Cold Chem	Vitrification Cold Chemical System
WCS	Waste Characterization and Shipping
WMin	Waste Minimization
WMin/PP Plan	Waste Minimization/Pollution Prevention Awareness Plan
WMO	Waste Management Operations
WMTS	Waste Management Technical Support
WNYNSC	Western New York Nuclear Service Center
WRPA	Waste Reduction and Packaging Area
WVDP	West Valley Demonstration Project
WVNS	West Valley Nuclear Services Company, Inc.

DEFINITIONS

1. Acute Hazardous Waste - Any hazardous waste listed in 6 NYCRR Part 371.4(d)(5) and certain dioxin containing wastes listed in 40 CFR 261.31(a). Acute hazardous waste is also addressed in 40 CFR 261.

2. Audit (Waste Reduction) - A thorough analysis of processes and wastes to generate detailed information on the types and quantities of wastes that are being generated. Completion of a waste reduction audit identifies problem areas and provides baseline data from which to gauge the success of a waste reduction program.

3. Disposal - waste emplacement designed to ensure isolation of waste from the biosphere, with no intention of retrieval for the foreseeable future, and that requires deliberate action to regain access to the waste.

4. Environmental Restoration - cleanup and restoration of sites contaminated with radioactive and hazardous substances from past production, accidental releases, or disposal activities.

5. Good Housekeeping Practices - Waste stream segregation, improved operation and maintenance of existing facilities, inventory controls, spill and leak prevention, and other waste reduction practices not involving significant process or equipment changes.

6. Hazardous Waste - A waste or combination of wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may: 1) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, packaged, stored, transported, disposed, or otherwise managed [Title 9-Industrial Hazardous Waste Management, Sec. 27-0901(3) of the New York Solid and Hazardous Waste Management Laws. A complete list of wastes is listed in 6 NYCRR Part 371].

7. Hazardous Waste Storage Facility - A facility designated for the interim storage (90 days or less) of hazardous wastes at WVNS prior to off-site shipment to a permitted Treatment, Storage, Disposal (TSD) facility.

8. High-Level Waste - The highly radioactive waste material that results from the reprocessing of spent nuclear fuel. This includes liquid waste produced directly in reprocessing and any solid waste derived from the liquid that contains a combination of transuranic and fission products in concentrations requiring permanent isolation.

9. Industrial Waste - Nonhazardous, nonradioactive waste that can not be disposed of in a landfill per WV-650, Shipping Procedure- Nonradioactive/ Nonhazardous Material, or SOP 09-12, Solid Nonradioactive, Nonhazardous, Nonindustrial waste Disposal.

10. Ion Exchange - A reversible chemical reaction between a solid (typically a synthetic ion exchange resin) and a liquid (typically a water solution) that selectively replaces certain ions (e.g., dissolved metals) in the liquid with other metal ions or the hydrogen ion.

11. Municipal or Municipal Sanitary Waste - Sanitary waste generated from routine office activities. This includes paper, food, containers, pens, packaging material, etc. Also known as "office waste".

12. Pollution Prevention - the use of any process, practice, or product that reduces or eliminates the generation and release of pollutants, contaminants, hazardous substances, and wastes, including those that protect natural resources through conservation or more efficient use.

13. Pollution Prevention Opportunity Assessment - Part of an ongoing effort to identify, evaluate, and implement efforts to eliminate/reduce waste generation and to accurately characterize the wastes.

14. Pollution Prevention Opportunity Assessment Coordinator - A person, or point of contact, assigned by the Department Manager to perform the PPOAs for the Department. This includes estimating the number of processes requiring PPOAs, prioritizing PPOAs, and establishing a schedule for the completion of PPOAs.

15. Radioactive Waste - Waste material whose radioactivity level exceeds the site-release criteria described in WVDP-010, Radiological Controls Manual, or whose radiological status can not be verified.

16. Radioactive Mixed Waste - Material containing characteristics of both radioactive and hazardous wastes as defined by the Atomic Energy Act, the Resource Conservation and Recovery Act, and 6 NYCRR part 371.

17. Recycling - Use, reuse, and reclamation techniques (resource recovery). Use or reuse involves the return of a potential waste material either to the originating process as a substitute for an input material, or to another process as an input material. Reclamation is the recovery of a useful or valuable material from a waste stream. Recycling allows potential waste materials to be put to a beneficial use rather than designated for treatment, storage or disposal.

18. Sanitary Waste - wastes such as garbage that are generated by normal housekeeping activities and are not hazardous or radioactive.

19. Satellite Accumulation Area - A designated area at or near the point of generation of hazardous wastes, for the accumulation of a limited quantity (55 gallons of HW or one quart of acutely HW) of those wastes per SOP 300-04.

20. Source Reduction - The elimination or reduction of waste generation at the point of generation, usually within a process. Techniques include closed loop (in-process) recycling, substitution with less hazardous materials, process optimization or modification technology changes, and administrative changes such as inventory control and good housekeeping practices such as waste segregation. Source reduction results in reducing the amount of potential waste material.

21. Substitution - Replacing a toxic substance used in a process with a nontoxic or less toxic substance.

22. Technology Modification - Improved controls, energy and water conservation, process redesign, process modification, equipment changes, and other technology changes that reduce waste generation.

23. Treatment - technological processes that reduce the volume, toxicity or mobility of a waste. Examples include, but are not limited to, incineration, compaction, neutralization, chemical extraction, physical separation, and solidification/stabilization techniques.

24. Treatment, Storage and Disposal Facility - Contiguous land and structures... used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operation units (e.g., one or more landfills, surface impoundments, or combinations thereof).

25. Waste Stream Characterization - Collection of data on waste generated from a specific process or activity; to include generation rates, constituents, and other key physical/chemical/radiological characteristics based on facility records and analytical results from waste stream samples. Where analytical data is not available, characterization of key physical/chemical/radiological parameters is based on process knowledge. Common sources of process knowledge include interviews with facility personnel, facility procedures, shipping records, manifests, and Material Safety Data Sheets.

26. Waste Minimization - any action that avoids or reduces the generation of waste by source reduction, energy usage improvements, or recycling. This action will be consistent with the general goal of minimizing present and future threats to human health, safety, and the environment.

27. Waste Reduction - reduction of the total amount of waste that is generated by DOE operations through waste minimization and treatment activities. Treating, discharging, or disposing of wastes after they have been generated is not waste reduction. Reducing RCRA-regulated hazardous wastes by proportionally increasing water discharges (dilution) is also not an acceptable form of waste reduction.

REFERENCES

1. 1994 DOE Waste Minimization/Pollution Prevention Crosscut Plan

2. 1996 DOE Pollution Prevention Program Plan

3. DOE Order 5400.1, General Environmental Protection Program

4. Implementation Guidance for DOE Order 5400.1, Waste Minimization/ Pollution Prevention Plan and Waste Reduction Reporting of DOE Hazardous, Radioactive, and Radioactive Mixed Wastes, Final draft, March 1990

5. Implementation Guidance-Update for DOE Order 5400.1 Site WMin/PP Awareness Plans, Final Draft, March 1994

6. Executive Order 12873, "Federal Acquisition, Recycling, and Waste Prevention"

7. Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements

8. DOE Order 5400.3, Hazardous and Radioactive Mixed Waste Program

9. DOE Order 5820.2A, Radioactive Waste Management

10. US DOE-WVPO, Site Specific Plan, WVDP-SSP-004 Rev. 3, June 1993

11. U.S. EPA, Office of Research and Development, "The EPA Manual for Waste Minimization Opportunity Assessments."

12. New York State Hazardous Waste Reduction Act (Chapter 831 of the Laws of 1990).

13. SOP 300-7, Waste Status Determination, Rev. 7

14. WV-620, Purchase Requisitions and Supplements, Rev. 18

15. WV-918, Waste Minimization and Pollution Prevention Awareness Program, Rev. 0

16. WV-996, Hazardous Waste Management Program, Rev. 4

17. WVDP-002, WVNS Quality Assurance Program Plan

18. WVDP-010, Radiological Controls Manual, Rev. 11

19. WVDP-011, Industrial Hygiene & Safety Manual, Rev. 14

20. WVDP-019, Annual Waste Management Plan, Rev. 15

21. WVDP-073, Hazardous Waste Management Plan, Rev. 3

22. WVDP-076, Environmental Protection Implementation Plan, Rev. 7

23. WVDP-077, Mixed Waste Management Plan, Rev. 2

24. WVDP-081, Lead Management Plan, Rev. 1

25. WVDP-084, Solid Waste Management Plan, Rev. 1

26. WVDP-099, WVNS Environmental Quality Assurance Program, Rev. 1

27. WVDP-111, WVNS Quality Assurance Program, Rev. 4

28. 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste

29. 6 NYCRR 373, Hazardous Waste Management Operations

30. 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response

Document ID Number: WVDP-087 Revision: 3 Date: 04/15/97
Title: Waste Minimization/Pollution Prevention Awareness Plan

The attached document is submitted for your review APPROVAL. Return this review sheet to:

Mail Stop: WV-B1C Cognizant Author: T. E. Jones Extension 2413
by 04/25/97.

Additional Instructions:

Mail Stop/Reviewer	Initials and Date	✓ If Review Waived	✓ If Concur	✓ If Concur With Comments*	✓ If Nonconcur*	Cognizant Mgr. ✓ If Revision Constitutes a Periodic Review
WV-B1A/G. F. Centrich		[ ]	[ ]	[ ]	[ ]	[ ]
WV-B1N/D. L. Dempster		[ ]	[ ]	[ ]	[ ]	[ ]
WV-TSB/P. S. Klanian		[ ]	[ ]	[ ]	[ ]	[ ]
WV-201/S. A. MacVean		[ ]	[ ]	[ ]	[ ]	[ ]
WV-AA4/S. G. Schneider		[ ]	[ ]	[ ]	[ ]	[ ]
WV-B1C/P. E. Walters		[ ]	[ ]	[ ]	[ ]	[ ]
AOC-25/P. C. Weddle		[ ]	[ ]	[ ]	[ ]	[ ]
WV-207/M. A. Wright		[ ]	[ ]	[ ]	[ ]	[ ]
WV-301/J. L. Mahoney		[ ]	[ ]	[ ]	[ ]	[ ]
		[ ]	[ ]	[ ]	[ ]	[ ]
Optional Reviewers	Circle					
42/Tech.Communic. & Policy Admin.	Y or N	[ ]	[ ]	[ ]	[ ]	

Reviewer Signature Indicating Concurrence with Original Nonconcur — Date

The appropriate/impacted departments have reviewed and approved this controlled document; all comments have been incorporated and/or resolved.

Cognizant Manager Signature (or designee) — Date

Policy-Level Document Cancellation Approval

WVNS President Signature — Date

1. USQD (Complete either A or B):

A. [ ] USQD Safety Exclusion previously completed and sent to Records Management (per WV-914).
B. Is a USQ Safety Evaluation (USQD Form WV-3306, Sections V, VI, & VII) required?

[ ] No
[ ] Yes - If yes, attach completed Form WV-3306.

USQD Originator or Safety Analyst Signature — Printed Name — Date

OPERATIONS PROCEDURES ONLY:

Signature indicating Walk-through (WV-3802) Completed:

(Print Name) Operations Manager or Designee — Date

* - Attach comments on Form WV-1004a

WEST VALLEY NUCLEAR SERVICES COMPANY, INC.
DOCUMENT REVIEW COMMENTS FORM

Document ID No.: WVDP-087 Revision No.: 3
Reviewer Initials: _____ Date: _____

✓ If Substantial Comment	-Page # -Step #	Reviewer Comments	Author Disposition

←
←
←
←
←
←
←
←
←
←
←
←
←
←
←
←
←
←
←
←